



## CITY OF TUCSON GAS PIPE INSTALLATION STANDARDS

These standards are intended to be a guide to the homeowner reconnecting, replacing or modifying a gas line. This standard does not supersede the Uniform Plumbing Code. For more specific information refer to Chapter 12 of the UPC.

- Gas pipe shall not be bent in any way. Changes in direction of gas piping shall be made by the appropriate use of approved fittings.
- Excavations required for the installation of underground piping shall be left open until such time as the piping has been inspected and approved.
- The depth that pipe must be buried underground is:
  1. Metallic.....12 inches
  2. Plastic.....18 inches
- Gas pipe is not permitted to be installed *in or on* the ground under any building or structure. The term “building or structure” shall include porches, steps, breezeways, roofed area, roofed patios, carports, covered walks and driveways and similar structures. All exposed gas piping shall be kept at least six inches above grade or structure.
- All exposed piping installed on a roof shall be kept at least one and one-half inches above the roof and secured to blocks or supports at intervals indicated in Table 12-2.
- All gas pipe protective coating shall be of approved type, machine applied in conformance with approved standards.
- Joints must be cleaned, coated with approved gas pipe paint primer and hand wrapped spirally with approved plastic tape.
- Where unions are necessary, right and left nipples and couplings shall be used. Ground joint unions are approved under very limited conditions. Please refer to Section 1211.10 of the 1994 Uniform Plumbing Code.
- An accessible shut-off valve be installed in the fuel supply piping, within three feet of the appliance and ahead of the union connection to the appliance.
- A number 18 covered tracer-wire shall be installed with the attached to underground non-metallic gas piping and shall terminate above grade at each end. Plastic pipe shall be factory marked with the words “Natural Gas”.
- **All gas pipe installations must be tested to verify there are no leaks.** The test must maintain the following pressure for a period of at least 15 minutes.
  1. **10 psi** for threaded metallic pipe and non-metallic pipe.
  2. **60 psi** for welded metallic pipe.
  3. **3 psi** for mobile homes.
- The inspection of chimneys and vents on gas appliances shall be made after the chimney, vents or parts, authorized by a permit, have been installed and before cover/concealment.
- Gas storage-type water heaters shall be provided with a temperature and pressure relief valve with a relief drain to the outside of the building or to an approved location.
- **NOTE:** If you are repairing, replacing or adding gas line, it is important to verify that the pipe you are replacing or adding is the correct size. In order to do this you need 2 things:
  1. The total length of the pipe measured from the meter to the farthest away appliance..
  2. The total BTU’s of all the appliances in the house that are being fed from the gas meter.

Please refer to the two attached charts for more information.

Table 12-1

Minimum Demand of Typical Gas Appliances  
In BTU Per Hour (Watts)

Appliance	Demand in	
	<u>BTU/Hr</u>	<u>Watts</u>
Domestic Gas Range.....	65,000	19,045
Domestic Recessed Top Burner Section.....	40,000	11,720
Domestic Recessed Oven Section.....	25,000	7,325
Storage Water Heater up to 30 gal. (113.6L) Tank.....	30,000	8,790
Storage Water Heater 40gal (151.4L) to 50 gal (189.3L) Tank...	50,000	14,650
Domestic Clothes Dryer.....	35,000	10,255
Fireplace Log Lighter (Residential).....	25,000	7,325
Fireplace Log Lighter (Commercial).....	50,000	14,650
Barbecue (Residential).....	50,000	14,650
Gas Refrigerator.....	3,000	879
Bunsen Burner.....	3,000	879
Mobile Home – Each (See Appendix E).....		
Gas Boilers (per horsepower).....	10,000	2,930
Steam Boilers (per horsepower).....	50,000	14,650

Table 12-2  
Support of Piping

***SIZE OF PIPING***

	Inches	MM	Feet	M
Horizontal or Vertical	$\frac{1}{2}$	12.7	6	1.8
Horizontal or Vertical	$\frac{3}{4}$ or 1	19.1 or 25.4	8	2.4
Horizontal	1 $\frac{1}{4}$ or larger	31.8 or larger	10	3.1
Vertical	1 $\frac{1}{4}$ or larger	31.8 or larger	Every Floor Level	

Table 12-3  
Size of Gas Piping

Maximum Delivery Capacity in Cubic Feet of Gas Per Hour (CFH)  
To Determine CFH, Divide Total BTU's by 1000.

*PIPE SIZE*

Length	½"	¾"	1"	1 ¼"	1 ½"	2"	2 ½"	3"	3 ½"	4"
10 ft.	174	363	684	1,404	2,103	4,050	6,455	11,412	16,709	23,277
20 ft.	119	249	470	965	1,445	2,784	4,437	7,843	11,484	15,998
30 ft.	96	200	377	775	1,161	2,235	3,563	6,299	9,222	12,847
40 ft.	82	171	323	663	993	1,913	3,049	5,391	7,893	10,995
50 ft.	73	152	286	588	880	1,696	2,703	4,778	6,995	9,745
60 ft.	66	138	259	532	798	1,536	2,449	4,329	6,338	8,830
70 ft.	61	127	239	490	734	1,413	2,253	3,983	5,831	8,123
80 ft.	56	118	222	456	683	1,315	2,096	3,705	5,425	7,557
90 ft.	53	111	208	428	641	1,234	1,966	3,476	5,090	7,091
100 ft.	50	104	197	404	605	1,165	1,857	3,284	4,808	6,698
125 ft.	44	93	174	358	536	1,033	1,646	2,910	4,261	5,936
150 ft.	40	84	158	324	486	936	1,492	2,637	3,861	5,378
200 ft.	34	72	135	278	416	801	1,277	2,257	3,304	4,603
250 ft.	30	64	120	246	369	710	1,131	2,000	2,929	4,080
300 ft.	28	58	109	223	334	643	1,025	1,812	2,654	3,697

How to use Table 12-3 (simple method):

1. Find on the left hand side of the chart the total length of pipe from the meter to the farthest away appliance. This will be the row that you will use for calculating your entire system. Do not use any other row once you have determined the length.
2. Find the total CFH's in the row that is equal to or greater than your total. For the purposes of sizing, divide your total BTU's by 1000 to obtain the CFH.
3. Once you have found the number, go up the column to see the required pipe size. This is the size needed from the meter to the first tee in the line.
4. To determine the size of the branch, add up the total BTU's served by the branch, convert to CFH's, use the same row and find the number that is equal to or greater than, go up the column to find the required pipe size of that branch.
5. Use this same procedure for all the remaining branch lines.